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PROCESS DIVISION

AEC RESEARCH AND DEVELOPMENT REPORT

PROCESS DESIGN AND DEVELOPMENT DEPARTMENT

Report No: 3.68.1

Date: 5/28/46

Written by: S. E. Smiley
W. J. Angulo

LOSS OF PRODUCT IN THE PURGE GASES

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

PROCESS DESIGN AND DEVELOPMENT DEPARTMENT

Report No: 5.68.1

Date: 5/28/46

Written by: S. H. Smiley
W. J. Angulo

TO: A. B. HALE



LOSS OF PRODUCT IN THE PURGE GASES

At the request of Dr. M. Benedict, a study was made of the amount of product being lost in the purge gases at 312-1 during plant operation (normal and abnormal). This study was undertaken to determine the feasibility of running the recovery units set up in 312 section (i.e., running the cold traps cold) or installing large alumina traps. Hourly average values for C-616 concentrations at 312-1 cell 2 were obtained from space recorder charts, and these figures along with hourly average C-74 purge rates were used to calculate the product loss during the months of February, March and April, 1946. From a statistical analysis of the data which appears below, the following conclusions have been reached.

1. It is not economically feasible to recover the product loss.
2. If it were desired to recover the C-616, no recovery unit presently in operation is applicable because of the extremely low concentration of C-616 in the purge gases.

The average loss per day for the months of February, March and April, 1946, is shown below:

| | | |
|----------|---------------------------|------------------------------------|
| February | (29.4 plus or minus 14.6) | $\times 10^{-5}$ lbs. of C-616/day |
| March | (11.1 plus or minus 9.9) | $\times 10^{-5}$ lbs of C-616/day |
| April | (2.2 plus or minus 0.6) | $\times 10^{-5}$ lbs of C-616/day |

This data is substantiated by laboratory analysis of alumina traps presently in operation. The decreasing trend is misleading for the reduction in average loss is mainly due to a decrease in the variability of the purge rates. Therefore, the best prediction that can be made is that the average loss will be $(2.2 \text{ plus or minus } 0.6) \times 10^{-5}$ lbs. of C-616 per day.

The figures given above are at the 95% certainty level, which means that, if the above data were collected numerous times under similar conditions, the results would lie within the ranges specified, 19 times out of 20.

Approved: /S/ W. C. Moore
W. C. Moore
Development Section

/S/ S. H. Smiley
S. H. Smiley

/S/ W. J. Angulo
W. J. Angulo

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